

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE

BRIDGESTONE SPORTS CO., LTD.,	)	
and BRIDGESTONE GOLF, INC.,	)	
	)	
Plaintiffs,	)	C. A. No. 05-132 (JJF)
	)	
v.	)	
	)	<b>PUBLIC VERSION</b>
ACUSHNET COMPANY,	)	
	)	
Defendant.	)	

ACUSHNET'S MEMORANDUM IN SUPPORT OF  
ITS MOTION FOR SUMMARY JUDGMENT OF NON-INFRINGEMENT  
OF U.S. PATENT NUMBER 5,782,707

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Defendant Acushnet Company (“Acushnet”) files this Opening Memorandum in Support of Its Motion for Summary Judgment of Non-Infringement of U.S. Patent No. 5,782,707 (“the ‘707 patent”) (Ex. 1).

## **I. INTRODUCTION**

Plaintiffs Bridgestone Sports Co. Ltd. and Bridgestone Golf, Inc. (“Bridgestone”) accuse Acushnet’s “Pro V1 392,” “Pro V1 392 (stretched),” and “◀Pro V1●392▶” golf balls of infringing claim 1 of the ‘707 patent. But as demonstrated below, Bridgestone lacks sufficient admissible evidence by which it can meet its burden at trial to *prove* infringement of the ‘707 patent. Acushnet will demonstrate that the expert report of Larry C. Cadorniga regarding infringement of the ‘707 patent fails to meet the standards for admissibility in the Third Circuit and that, based on the remaining record evidence, even in the light most favorable to Bridgestone, no reasonable jury could reach a liability verdict in Bridgestone’s favor on any of these accused products.

## **II. NATURE AND STAGE OF PROCEEDINGS**

This is a patent infringement suit involving eleven patents and scheduled for trial, starting June 18, 2007. Bridgestone alleges that Acushnet infringes seven patents-in-suit. Acushnet alleges that Bridgestone infringes four patents-in-suit. Fact and expert discovery is finished and a pre-trial conference will be held on May 25, 2007. The Court has not yet issued a *Markman* decision construing the claims of the asserted patents, but did hold a *Markman* hearing on November 29, 2006. Under the Scheduling Order, as amended, case dispositive motions are now due, and the Court has ordered briefing of those motions “pursuant to D. Del. LR 7.1.2.” (D.I. 219 at 1).

## **III. SUMMARY OF ARGUMENT**

Bridgestone offers the Expert Report of Larry C. Cadorniga as evidence that Acushnet’s three accused models of Pro V1 golf balls infringe claim 1 of the ‘707 patent. Mr. Cadorniga’s report, however, is not admissible evidence because it fails to meet the

Third Circuit standards for expert testimony. Thus, Exhibit E to Mr. Cadorniga's report, which contains his opinion regarding the '707 patent, should be excluded from evidence. Without the benefit of Mr. Cadorniga's report, Bridgestone has no admissible evidence to show that Acushnet infringes claim 1 of the '707 patent. Even if Mr. Cadorniga's report is not excluded, Bridgestone has failed to provide sufficient evidence to enable the finder of fact to quantify the number of accused Pro V1 golf balls that infringe claim 1, and it has failed to offer any evidence regarding the infringement of two of the three accused models, the Pro V1 392 and the Pro V1 392 (stretched).

In his report, Mr. Cadorniga opines that all [REDACTED] of the accused Pro V1 golf balls literally meet all of the limitations of claim 1, including having a core hardness gradient between 8 and 20 degrees. He bases his opinion upon tests of only five used Pro V1 golf balls, which gave an average hardness gradient of 19.5 degrees. His report concluded that this mean value, which is not representative of the hardness of any actual Pro V1 golf ball, is statistically significant proof of the fact that all [REDACTED] accused Pro V1 golf balls produced between 2000 and 2002 have the claimed gradient.

Mr. Cadorniga's expert opinion on this subject, which amounts to no analysis and is purely his ipse dixit, cannot be admitted as evidence to defeat summary judgment under Third Circuit's jurisprudence regarding Fed. R. Ev. 702 and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). Mr. Cadorniga lacks the background in statistical techniques to render any opinion regarding the statistical significance of a test, or to render any opinion regarding the properties of all accused golf balls based upon the testing of a small sample. His methodologies are meaningless because he fails to perform any statistical analysis of his results, fails to consider balls that were properly sampled from the entire population of accused products, and fails to base his opinion on a statistically significant number of tests. Finally, as he has conceded in deposition that the five balls do not comprise a statistically significant sample by themselves, his opinion is



nothing other than a layman's commentary on data already in evidence and does not assist the trier of fact.

#### IV. STATEMENT OF FACTS

##### A. The Asserted Claim


The stated objective of the '707 patent, entitled *Three Piece Solid Golf ball*, is to provide a solid golf ball that has an increased flight distance and improved control. (Ex. 1, '707 patent, col. 1, ll. 57-60). The named inventors believed that the stated objective could be achieved in a three layer golf ball by "optimizing the hardness distribution of the core, forming a hard intermediate layer between the core and the soft cover and adjusting a percent dimple surface occupation." (*Id.* at Col. 1, ll. 63-67).

Claim 1 requires "a three piece solid golf ball of the three-layer structure comprising a solid core, an intermediate layer, and a cover, having a plurality of dimples in the ball surface wherein the solid core, intermediate layer and cover each have a hardness as measured by a JIS-C scale hardness meter wherein

- the core center hardness is up to 75 degrees,
- the core surface hardness is up to 85 degrees,
- the core surface hardness is higher than the core center hardness by 8 to 20 degrees,
- The intermediate layer hardness is higher than the core surface hardness by at least 5 degrees,
- and the cover hardness is lower than the intermediate layer hardness by at least 5 degrees,
- and the dimples occupy at least 62% of the ball surface."

Bridgestone is asserting claim 1 of the '707 patent against Acushnet's "Pro V1 392" golf balls manufactured from late 2000 to early 2001, its "Pro V1 392 (stretched)" golf balls manufactured from early 2001 to late 2001, and its "◀Pro V1•392▶" golf

balls manufactured from late 2001 and 2002. (*See* Ex. 2, Felker 2/20/2007 Report at 91).



### **B. The Hardness Gradient Limitation**

The limitation of claim 1 that requires a core wherein “the core surface hardness is higher than the core center hardness by 8 to 20 degrees” is determined by cutting a core in half, measuring the hardness at the center point and at the spherical core surface and then taking the difference. (*See* Ex. 1, ‘707 patent, col. 7, lines 8-12). That difference in hardness measurements is often referred to as the hardness gradient. (Ex. 3, 2/20/07 Cadorniga Report at 48).

Every golf ball core can be measured to determine its hardness gradient. According to Bridgestone’s experts, however, many factors determine the size of the hardness gradient in a particular golf ball core. (*See* Ex. 4, 3/15/07 Calabria Tr. at 65:18 - 65:20). These factors include the chemistry employed in preparing the rubber, the time and temperature parameters during molding, as well as the size of the cavities and pressure used to form the cores. (*See* Ex. 5, 2/20/2007 Calabria Report at ¶47). Other factors include the core size, how the materials are mixed prior to molding, including sequencing of materials and time parameters and temperature profiles, and information regarding the press, including the geometry of the mold, and the number, shape, and layout of mold cavities. (*See* Ex. 5, 2/20/2007 Calabria Report at App. C, ¶¶ 24-27; Ex. 4, 3/15/07 Calabria Tr. at 69:4 - 69:9; 71:12 - 73:7; 264:2 - 271:6). Without a detailed understanding of a particular core’s manufacturing process, Bridgestone’s expert testified that one cannot assume what the hardness is at an internal point of that core relative to its surface without testing that particular point. (*See* Ex. 6, 3/12/07 Cadorniga Tr. 235:3-235:11).

[REDACTED]

During the production of the accused Pro V1 golf balls, Acushnet's change notices show over seventy process changes took place that might have had an impact on the hardness gradient of those golf balls. (See Ex. 2, 2/20/07 Felker Report at ¶ 358). According to Bridgestone's expert, these include changes to the core size, core ingredients, and mixing parameters. (Ex. 4, 3/15/07 Calabria Tr. at 69:4 - 69:9; 71:12 - 73:7; 264:2 - 271:6).

[REDACTED]

**C. Mr. Cadorniga's Opinion Regarding Claim 1 of the '707 Patent**

In his January 16, 2007 Report, Mr. Cadorniga expressed the opinion that all the approximately [REDACTED] Pro V1 golf balls bearing the side stamps Pro V1 392, Pro V1 392 (stretched), and ◀Pro V1●392▶ infringe claim 1 of the '707 patent." (See Ex. 9, 1/16/2007 Cadorniga Report at E-1).

**1. Five ◀Pro V1●392▶ Golf Balls Have an Average Hardness Gradient Between 8 and 20 Degrees**

Mr. Cadorniga based his opinion on five used ◀Pro V1●392▶ golf balls obtained from usedgolfballs.com (Ex. 10, 3/30/07 Jones Tr. at 131:3 - 131:11). Dr.

Edward Caulfield obtained the five used ◀Pro V1•392▶ balls from Bridgestone's counsel. (*Id.*) Dr. Caulfield then measured the cores of each ball at the core center at 5 points and took the average and at the core surface at 5 points and took the average; and calculated the difference between the two. (*See* Ex. 11, 1/16/2007 Caulfield Report at EX-9, ¶¶ 8-11; 27-37). When Dr. Caulfield reported the hardness gradient to Mr. Cadorniga, however, he only reported the *average* hardness gradient of all five balls. (*See* Ex. 11, 1/16/2007 Caulfield Report at 9).

Mr. Cadorniga's basis for his opinion that "the accused Pro V1 golf balls *literally* have a core surface hardness that is higher than the hardness at the center of the core by 8 to 20 degrees JIS-C" is the fact that the "Difference" between the *average* core center and the *average* core surface resulted in an average difference of 19.5, which is between 8 and 20. (*See* Ex. 6, 3/12/07 Cadorniga Tr. at 290:11 – 292:6; Ex. 9, 1/16/2007 Cadorniga Report at E-8).

These values, reported in Table E-4 of Mr. Cadorniga's report, do not report any measurements of variance, such as the standard deviation. (Ex. 9, 1/16/07 Cadorniga Report at E-9). The values do not report the actual difference measured on any single ◀Pro V1•392▶ ball, or the minimum and maximum differences seen on any single ◀Pro V1•392▶ ball. (*Id.*).

Mr. Cadorniga also fails to address manufacturing variability in connection with his opinion regarding the "8 to 20" degree limitation. (Ex. 9, 1/16/07 Cadorniga Report, Ex. E). Mr. Cadorniga fails to offer any evidence that indicates if or when hardness values change over time. (*Id.*). Nor does he acknowledge Acushnet's change notices that show changes in core size, core mixing, and core ingredients - the factors Bridgestone's other expert says affect the core's hardness gradient. (*Id.*; Ex. 4 - 3/15/07 Calabria Tr. at 69:4 - 69:9; 71:12 - 73:7; 264:2 - 271:6).

**2. Mr. Cadorniga Does Not Show That Any One  
◀Pro V1•392▶ Ball Infringes the '707 Patent**

Mr. Cadorniga does not rely on Dr. Caulfield's testing for any of the other limitations of claim 1 of the '707 patent to conclude that the ▶Pro V1•392▶ balls infringe. That is because Dr. Caulfield does not test any of the five ▶Pro V1•392▶ balls for intermediate layer hardness, cover hardness or dimple coverage. (Ex. 9, 1/16/07 Cadorniga Report, Exhibit E). Instead, Mr. Cadorniga relies on Acushnet's manufacturing guidelines, deposition testimony and his own knowledge. (*Id.*) As a result, Mr. Cadorniga has no evidence to support his opinion that any one ball of the five ▶Pro V1•392▶ balls has all the limitations of claim 1 of the '707 patent, let alone all of them.

**3. Mr. Cadorniga Does Not Rely On Testing to  
Support His Opinion that the Pro V1 392 or the  
Pro V1.392 (stretched) Infringe the '707 Patent**

Mr. Cadorniga also does not rely on Dr. Caulfield's testing of the Pro V1 392 or the Pro V1 392 (stretched) to conclude that either of those balls infringe claim 1 of the '707 patent. (Ex. 9, 1/16/07 Cadorniga Report at E-9). That is because Dr. Caulfield does not test *any* of those balls. (*Id.*) Mr. Cadorniga simply concludes that "golf balls bearing these side stamps have a core construction and composition which is the same as the golf balls bearing the side stamp ▶Pro V1•392▶." (*Id.*)

Mr. Cadorniga bases his opinion on Acushnet's manufacturing guidelines and the deposition of Acushnet engineer Jeff Dalton. (*Id.* at E-9, n. 15).

Further, Mr. Cadorniga did not review any Acushnet change notices for the Pro V1 392 or the Pro V1 392 (stretched)

Mr. Cadorniga did not offer any other basis for his

conclusion that the accused Pro V1 balls had a core composition and construction that were the same and remained constant between 2000 and 2002. (Ex. 9, 1/16/07 Cadorniga Report at Exhibit E).

**4. 2 out of 5 of the ◀Pro V1•392▶ Balls Did Not Have a Hardness Gradient Between 8 and 20**

Mr. Cadorniga does not rely on the hardness gradient of each individual ball to opine that all ◀Pro V1•392▶ balls meet the “8 to 20” limitation of claim 1 of the ‘707 patent, but rather the average hardness gradient. (Ex. 9, 1/16/07 Cadorniga report at E-9).

Dr. Caulfield’s raw data actually shows that two of the five ◀Pro V1•392▶ balls had hardness gradients *greater* than 20 degrees. (Ex. 2, 2/20/2007 Felker Report at ¶367 (calculating the hardness gradients shown in Dr. Caulfield’s testing data)).

Mr. Cadorniga fails to offer any evidence that leads him to conclude all accused Pro V1 golf balls – and not just those that he has tested – meet hardness gradient limitation of claim 1. (Ex. 9, 1/16/07 Cadorniga Report at Exhibit E). He does not perform any mathematical analyses to justify his conclusion. (*Id.*). He does not address whether 100% of the accused products have the claimed gradient, or whether a lesser amount does. (*Id.*).

**D. Mr. Cadorniga’s Opinion Regarding Statistical Significance**

Mr. Cadorniga opines that “the number of samples of the accused Acushnet golf balls tested is more than sufficient to comprise a statistically significant sample.” (Ex. 9, 1/16/2007 Cadorniga Report at 6).

Mr. Cadorniga admits that he did no analysis to render this opinion, and there is no analysis in his report. (*See* Ex. 6, March 12 Cadorniga Tr. at 276:6 – 276:11; Ex. 9, 1/26/07 Cadorniga report at E-9). During his deposition, Mr. Cadorniga explained that the basis for his opinion was that he “thought that the number of . . . golf balls that have been tested is sufficient enough to establish significance.” (*See* Ex. 6, 3/12/07 Cadorniga

Tr. at 276:9 - 276:11). When he formulated that opinion, he did not know that only five ◀Pro V1•392▶ balls were tested for hardness. (See Ex. 6, 3/12/07 Cadorniga Tr. at 276:12 – 277:3).

Mr. Cadorniga also admits that he is not an expert in statistics. (See Ex. 6, 3/12/07 Cadorniga Tr. 19:1 - 19:3). He has had no college coursework in statistics. (See Ex. 9, 1/16/2007 Cadorniga Report Ex. A; Ex. 6, 3/12/07 Cadorniga Tr. at 279:11 – 279:13). His only coursework in the area is a part-time executive course on “general concepts” which he took sometime between 1989 and 1991. (Ex. 6, 3/12/07 Cadorniga Tr. at 279:11 – 280:12).

Mr. Cadorniga acknowledges that the proper methodology is to test balls from different periods of production. He testified that the “standard process” he would normally use would be to “pick two dozen balls from [the] middle of the run or the first start of the run, middle of the run or the end of the run.” (See Ex. 6, 3/12/07 Cadorniga Tr. 281:16 - 282:8).

However, when he wrote his expert report, Mr. Cadorniga did not know how the balls that Dr. Caulfield tested were obtained. (See Ex. 6, 3/12/07 Cadorniga Tr. at 284:6 – 284:8). In fact, Dr. Caulfield testified that there was no sampling plan for initially selecting the balls he tested. (Ex. 14, 3/29/07 Caulfield Tr. at 79:15 -79:22).

Mr. Cadorniga offers no basis to opine that the five ◀Pro V1•392▶ balls are a representative sample of the entire [REDACTED] accused Pro V1 balls. (Ex. 9, 1/16/07 Cadorniga Report at Exhibit E). He fails to address this issue anywhere in his report. (Ex. 9, 1/16/07 Cadorniga Report at Exhibit E).

Mr. Cadorniga has performed tests to determine the properties of golf balls “many times,” but only in the context of research and development. (See Ex. 6, 3/12/07 Cadorniga Tr. 280:13 to 280:20). He has only performed tests to evaluate “trial runs” and “prototype runs,” but he has not performed tests that involved balls produced during the regular course of manufacturing. (See Ex. 6, 3/12/07 Cadorniga Tr. 280:18 - 281:9).



The largest test that he had developed involved the properties of no more than several thousand balls. (*See id.*).

## V. APPLICABLE LAW

### A. Admissibility of Expert Reports

The Third Circuit has held that Rule 702 provides three distinct substantive restrictions on the admission of expert testimony: qualifications, reliability, and fit. *See Elcock v. Kmart Corp.*, 233 F.3d 734, 741 (3d Cir. 2000); *In re Paoli R.R. Yard PCB Litigation*, 35 F.3d 717, 742 (3d Cir. 1994). The plaintiff must establish the expert's qualifications and the reliability and fit of the proposed testimony by a "preponderance of proof." *See Kerrigan v. Maxon Ind.*, 223 F. Supp. 2d 626, 630 (E.D. Pa 2002); *In re TMI Litigation*, 193 F.3d 613, 663 (3d Cir. 1999).

The first requirement is that an expert be qualified. Although this requirement has been construed liberally in the Third Circuit, and can encompass practical experience, as well as academic training and credentials, at a minimum, a proffered expert witness must possess skill or knowledge greater than the average layman. *See Waldorf v. Shuta*, 142 F. 3d 601, 625 (3d Cir. 1998). The witness must have "specialized knowledge" regarding the area of testimony. *Id.* An expert may be deemed unqualified if his area of experience is adjacent to, but not actually encompassing, the subject matter of his testimony. *See Ex. 17, Player v. Motiva Enters. LLC*, No. 02-3216, 2006 U.S. Dist. LEXIS 2288, at \*20 (D. N.J. 2006).

The second requirement is that the opinion be reliable. The Third Circuit has enumerated a list of factors that should be considered in evaluating whether a proposed methodology is reliable:

- (1) whether a method consists of a testable hypothesis;
- (2) whether the method has been subjected to peer review;
- (3) the known or potential rate of error;
- (4) the existence and maintenance of standards controlling the technique's operation;
- (5) whether the method is generally accepted;
- (6)



the relationship of the technique to methods which have been established to be reliable; (7) the qualifications of the expert witness testifying based on the methodology; and (8) the non-judicial uses to which the method has been put.

*See In re Paoli Railroad Yard PCB Litigation*, 35 F.3d at 742 (3d Cir. 1994).

The third requirement is that the expert's testimony fit, or that his testimony assists the trier of fact. *See Oddi v. Ford Motor Co.*, 234 F.3d 136, 145 (3d Cir. 2000). The opinion must be based on valid reasoning and reliable methodology. *Id.*

## **VI. ARGUMENT**

### **A. The Infringement Report of Larry C. Cadorniga Should be Excluded**

#### **1. Mr. Cadorniga Is Not Qualified to Render His Opinions**

##### **a. The Opinion Mr. Cadorniga Proffers Requires Specialized Knowledge in Statistical Techniques**

Mr. Cadorniga's infringement opinion is that each one of the approximately [REDACTED] accused Pro V1 golf balls with three different side stamps has a hardness gradient literally between 8 and 20 based on the fact that the average hardness gradient of five of those balls with one side stamp was 19.5. (See Ex. 9, 1/16/2007 Cadorniga Report at E-8 to E-9; Ex. 6, 3/12/07 Cadorniga Tr. at 290:8 – 292:6). In order to qualify as an expert who can legitimately proffer this opinion requires a specialized knowledge of statistical techniques and manufacturing variability on a large scale.

[REDACTED]

As a result, Mr.

Cadorniga must do more than confirm Acushnet's manufacturing guidelines – he must prove a physical property that has never been measured before in approximately [REDACTED] golf balls.

Moreover, Bridgestone's experts have identified numerous manufacturing variables that impact the size of the hardness gradient in golf balls. [REDACTED]

[REDACTED] Mr. Cadorniga needs to account for these changes in his analysis of the hardness gradient of the accused golf balls, but he failed to do so.

Combine these facts with the fact that Dr. Caulfield tested only five accused Pro V1 balls upon which Mr. Cadorniga based his opinion, and Mr. Cadorniga must have an expertise not only in opining on the statistical significance of testing 5 balls, but in doing so in the context of large scale manufacturing variability. Mr. Cadorniga has neither expertise.

**b. Mr. Cadorniga Is Not a Statistical Expert**

Mr. Cadorniga began his report by stating that the number of accused Acushnet golf balls tested was more than sufficient to comprise a statistically significant sample. (Ex. 9, 1/16/2007 Cadorniga Report at 6). Yet, Mr. Cadorniga admitted that he is not a statistical expert. (Ex. 6, 3/12/07 Cadorniga Tr. at 19:1 – 19:3). Mr. Cadorniga admitted he has no formal training in statistical analysis. (Ex. 6, 3/12/07 Cadorniga Tr. at 279:14 – 279:19). In fact, he only had an evening class in the “general concepts” of statistics almost 20 years ago. (Ex. 6, 3/12/07 Cadorniga Tr. at 279:14 – 279:19). He has no more than a layman's understanding of statistical analysis. He admitted in his deposition that he performed no statistical analysis upon which he based his opinion – his only basis was that, in his opinion, “a lot of balls” were tested - hardly the specialized knowledge the court requires from an expert. (Ex. 6, 3/12/07 Cadorniga Tr. at 275:20 – 276:27)

Thus, Mr. Cadorniga is not qualified to offer his opinion and it should be excluded.

**c. Mr. Cadorniga Is Not Qualified To Opine  
On Large Scale Manufacturing  
Variability**

Mr. Cadorniga does not possess the practical experience to render any opinion on the properties of the accused products. He has never performed tests to quantify the properties of more than several thousand balls. (Ex. 6, 3/12/07 Cadorniga Tr. at 281:7 – 281:9). In contrast, there are over [REDACTED] golf balls at issue here. His experience is limited to tests of prototype runs and trial runs - which are small batches of balls produced over relatively short periods of time. (Ex. 6, 3/12/07 Cadorniga Tr. at 280:17 – 280:20). Therefore, Mr. Cadorniga has never had to deal with manufacturing variability in his prior test work – either the routine variation due to changes in raw materials and environmental conditions or planned changes documented by change notices.

Courts in the Third Circuit have repeatedly excluded the testimony of experts who, despite having significant expertise in the general subject matter of their opinion, lack specialized knowledge in the subject matter of their testimony. *See* Ex. 17, *Player v. Motiva Enterprises LLC*, No. 02-3216, 2006 U.S. Dist. LEXIS 2288 (D.N.J. 2006); *Aloe Coal Co. v. Clark Equipment Co.*, 816 F.2d 110, 114 (3d Cir. 1987); Ex. 18, *Advanced Medical Optics, Inc. v. Alcon, Inc.*, No. 03-1095 2005 U.S. Dist. Lexis 5803, at \*27 (D. Del. 2005); Kerrigan, 223 F. Supp.2d at 635-638. *See also* Ex. 19, *U.S. v. Fisher*, 2002 U.S. Dist. LEXIS 22385 (E.D. Pa 2002) (rejecting the testimony of an experienced and certified firearms tester regarding a firearms test that he had seldom performed prior to the litigation because it was distinguishable from the “shock and drop” test that he normally performed); *Surace v. Caterpillar, Inc.*, 111 F.3d 1039, 1055 (3d Cir. 1997) (disqualifying the testimony of an expert with over twenty years of experience as an

engineer in the heavy vehicle industry because he had no experience with the specific design concept at issue in the case).

Mr. Cadorniga has never tried to characterize the properties of several years' worth of golf ball production before. He is not qualified to do so in his case. His report demonstrates that he lacks the understanding of manufacturing and statistics necessary to make an informed opinion upon the properties of all of the accused Pro V1 golf balls based solely upon his observation of Dr. Caulfield's tests, and should be excluded.

## **2. Mr. Cadorniga's Opinions Are Not Reliable**

### **a. Mr. Cadorniga's "Mean Value" Analysis Is Not Reliable Because It Is Not Generally Accepted**

Mr. Cadorniga bases his entire opinion on a "mean value" analysis, in which he compares the average hardness gradient measured on Dr. Caulfield's test samples with the claimed range. (*See* Ex. 6, 3/12/07 Cadorniga Tr. at 290:11 – 292:6). Although he did not articulate as much, his hypothesis was whether or not all accused Pro V1 golf balls had a hardness gradient between 8 and 20 and he tested this hypothesis by examining the simple mean value of the five balls measured by Dr. Caulfield.<sup>1</sup> Mr.

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<sup>1</sup> When he wrote his expert report, Mr. Cadorniga was clearly of the opinion that the "8 to 20" limitation was literally infringed because the mean value of the balls' hardness gradient was less than 20. (*See* Ex. 6, 3/12/07 Cadorniga Tr. at 290:11 – 292:6). Elsewhere in his report, when he obtained a mean test value outside of the claimed range, he also rendered an opinion under the doctrine of equivalents. (*See, e.g.*, Ex. 9, 1/16/2007 Cadorniga Report at F-6 – F-9; G-21 – G-26). He made no such argument for this limitation. In his deposition, when confronted with the raw data that showed balls with hardness gradients of 20.4 and 20.8, Mr. Cadorniga gave the new opinion that the literal scope of the claim may reach so far as 22 degrees. (Ex. 6, 3/12/07 Cadorniga Tr. at 245:5 – 245:13). His sole basis for this opinion was that his "own personal experience in performing this test has shown [him] as much." (*Id.*) This personal experience, without anything else, is an insufficient basis for such an opinion. "If the witness is relying solely or primarily on experience, then the witness must explain how that experience leads to the conclusion reached, why that experience is a sufficient basis for the opinion, and how that experience is reliably applied to the facts." Advisory Committee Notes to Fed. R. Evid. 702. Mr. Cadorniga has offered no such explanation here.

Cadorniga has provided no explanation for this analysis or why it is appropriate in this context. It is not.

Mr. Cadorniga's "mean value" analysis is meaningless in the field of statistics, and is a method of his own creation. He provides no evidence that his methodology has been "subjected to peer review" as required in the Third Circuit. *See In re Paoli*, 35 F.3d at 742. Nor has he provided any data regarding whether the technique is generally accepted or has a known rate of error. *Id.*

Mr. Cadorniga eschewed known and accepted statistical techniques. Dr. Clifton Sutton, a statistics professor at George Mason University and independent expert retained by Acushnet to offer an opinion on the five Pro V1 balls, performed a host of standard tests for his mean value analysis, such as the calculation of a proportion (estimating the percentage of accused ◀Pro V1•392▶ golf balls that have a hardness gradient 20 or greater and the percentage that have a gradient less than 20), the performance of a hypothesis test (calculating whether or not there is statistically significant proof that the ◀Pro V1•392▶ mean hardness gradient is actually over twenty), and the creation of a confidence interval (showing the maximum and minimum hardness gradients that could be expected in the ◀Pro V1•392▶ balls). (Ex. 15, 2/20/2007 Sutton Report at ¶¶ 29, 32 and 35). Courts in the Third Circuit consider the "the relationship of the technique to methods which have been established to be reliable" when determining the reliability of the technique. *See In re Paoli*, 35 F.3d at 742.

Other courts have rejected analyses conjured up by expert witnesses as unreliable. In *Southern Clay Products v. United Catalysts*, the court rejected a "mean percent volume" test created by an expert because it has not undergone peer review, ignored existing data, and was criticized by another expert as incorrect and inappropriate. Ex. 20, *Southern Clay Products v. United Catalysts, Inc.*, 2001 U.S. Dist. LEXIS 1951, at \*26 - \*27 (S.D. Tex. 2001). Likewise, Mr. Cadorniga's "mean value" analysis has not been subjected to peer review, ignores test data showing hardness gradients literally over 20,

and has been criticized by Dr. Sutton, a real expert in the field of statistics, as incorrect and inappropriate. Mr. Cadorniga's expert report is nothing more than an account of the examination of the measurement data of five tested golf balls, not "an informative explanation of the methods upon which he relied to test his theory that" all of the accused Pro V1 golf balls have a hardness gradient between 8 and 20. *See Kerrigan*, 223 F.Supp.2d at 638 (rejecting an expert's extrapolation from observations of one device to a theory regarding the behavior of a proposed new design).

**b. Mr. Cadorniga's Sampling Plan is Not  
Reliable Because it Tests an Improper  
Universe of Golf Balls**

Mr. Cadorniga's opinion is also unreliable because it is based upon improperly-collected sample balls. Mr. Cadorniga has provided no information to show that the five golf balls Dr. Caulfield tested were randomly sampled from the entire population of accused Pro V1 golf balls.

Dr. Sutton has opined that it is impossible to draw any conclusions regarding the entire population of accused golf balls if it cannot be shown that the balls were randomly selected from the entire population of interest. (*See* Ex. 15, 2/20/2007 Sutton Report at ¶28). Any conclusions based on the testing are probative, at best, of the properties of the population from which the balls were actually sampled. This is because Mr. Cadorniga violated fundamental principles of statistics when preparing his report.

First, it is a basic principle of statistics that the members of a sample should be representative of the population from which they will be used to make inferences. (*See* Ex. 15, 2/20/2007 Sutton Report at ¶ 15). That is, the balls tested should be representative of the balls manufactured under the entire breadth of manufacturing conditions. (*See id.*). If manufacturing conditions are known to be inconsistent over time, then balls should be selected from different times during the period of interest. (*See* Ex. 2, 2/20/2007 Felker Report at ¶349; Ex. 16, 3/5/07 Sutton Tr. at 45:12 – 45:18).



Second, it is necessary that the balls selected be randomly drawn from the entire population of interest. That means that the balls must be selected randomly, and that the selection process does not somehow narrow the scope of the population tested. (See Ex. 15, 2/20/2007 Sutton Report at ¶16).

Mr. Cadorniga's analysis is analogous to a survey in that he has performed tests on a small sample group and has attempted to extrapolate from those tests to the entire population of interest. Mr. Cadorniga's analysis is analogous to survey evidence and fails the legal requirements for reliability established for surveys in the Third Circuit:

A proper universe must be examined and a representative sample must be chosen . . . . It is essential that the sample design . . . meet the standards of objective surveying and statistical techniques.

*J & J Snack Foods, Corp. v. The Earthgrains Co.*, 220 F.Supp.2d 358, 369 (D. N.J. 2002) (quoting *Pittsburgh Press Club v. United States*, 579 F.2d 751, 758 (3d Cir. 1978)). Significant methodological deficiencies lessen the survey's probative value so that its probative value is substantially outweighed by the prejudice, waste of time, and confusion that it should cause at trial. *Id.* Courts in the Third Circuit have rejected surveys for examining an "improper sampling universe." *Id.* 220 F.Supp.2d at 371 (survey excluded for failing to sample the relevant universe of consumers).

There is a ball-to-ball variation in the core hardness gradients of the accused Pro V1 golf balls. This is due to routine changes in the manufacturing process, and the inherent variability of manufacturing. Dr. Sutton has observed this variation in Dr. Caulfield's raw data. (See Ex. 16, 3/5/07 Sutton Tr. at 42:3 – 42:14). Mr. Cadorniga fails to show that the balls that Dr. Caulfield tested were sampled from across the entire period of production, and, therefore, has failed to take this variation into account. (See Ex. 9, 1/16/2007 Cadorniga Report at Exhibit E). Because all the members of the universe of accused products were not equally likely to be selected for testing, the results of the testing cannot be statistically extrapolated to that universe. See *Boehringer*

*Ingelheim G.m.b.H v. Pharmadyne Lab.*, 532 F.Supp 1040, 1053 (D. Del. 1980). Therefore, Mr. Cadorniga's opinion regarding infringement should be limited to the five golf balls that Dr. Caulfield actually tested.

**c. Mr. Cadorniga's Analysis Is Unreliable Because it is Not Based Upon Sufficient Facts or Data**

**(1) Mr. Cadorniga Bases His Opinion Upon Tests of Five Balls**

Mr. Cadorniga bases his conclusions on measurements of five golf balls. Dr. Sutton opines that this is not a statistically significant group of measurements. (Ex. 15, 2/20/2007 Sutton Report at ¶28). He further opines that it is impossible to draw any conclusions regarding the accused golf balls based upon such a small sample size. (*Id.*). Courts confronted with determining the reliability of expert testimony look at whether or not the studies relied upon by the expert are statistically significant. *Magistrini v. One Hour Martinizing Dry Cleaning*, 180 F.Supp.2d 584, 605 n. 27 (D. N.J. 2002). Therefore, any opinion based on this data has an inadequate factual basis to be deemed reliable.

**(2) Mr. Cadorniga Baselessly Assumes that All Accused Pro V1 Golf Balls have the Same Hardness Gradient as the ◀Pro V1•392▶**

Mr. Cadorniga does not base his opinion regarding the "Pro V1 392" and "Pro V1 392 (stretched)" golf balls on any actual testing. Rather, he bases his opinion on these golf balls, which were produced from 2000 to late 2001, on the tests performed on the "◀Pro V1•392▶" golf balls produced from late 2001 to 2002. (*See* Ex. 9, 1/16/2007 Cadorniga Report at E-9). He assumes blindly that all the golf balls have the same core hardness gradient. (*Id.*)



Mr. Cadorniga bases this assumption on Acushnet Manufacturing Guidelines and the deposition of Acushnet engineer Jeff Dalton. (*Id.* at n. 15).

He did not offer any explanation for his tacit assumption that all of the properties identified in his report and Mr. Calabria's report that impact the core hardness gradient stayed exactly constant over this three year period. (*See* Ex. 9, 1/16/2007 Cadorniga Report at E-9).

Mr. Cadorniga therefore provides no reasonable basis for his opinion that all of the accused products have the same properties as the balls that he had tested. His report does not meet the test for admissibility in the Third Circuit. *See Izumi Prod. Co. v. Koninklijke Philips Electronics N.V.*, 315 F.Supp.2d 589, 602 (D. Del. 2004) (rejecting expert testimony on infringement based upon an examination of only 2 of 114 accused models of electric razors).

**3. Mr. Cadorniga's Opinions Do Not Fit the Facts of This Case**

**a. Mr. Cadorniga Fails to Provide An Adequate Basis for His Opinion that 5 Golf Balls Was Statistically Significant**

Mr. Cadorniga has put forth no support for his assumption that the five balls he tested are representative the [REDACTED] accused Pro V1 golf balls. In *General Electric v. Joiner*, the Supreme Court identified the need to provide justification for an expert's results.

Trained experts commonly extrapolate from existing data. But nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence which is connected to existing data by only the

*ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered. *General Electric v. Joiner*, 522 U.S. 136, 146 (1997).

The focus of the fit inquiry is on the “proffered connection between the scientific research or test result to be presented and particular disputed factual issues in the case.” *Oddi*, 234 F.3d at 145 (quoting *In re Paoli*, 35 F.3d at 742). Mr. Cadorniga has proffered no connection between Dr. Caulfield’s test results and the disputed infringement issues in this case. He simply looked at the average hardness gradient for the five balls that Dr. Caulfield tested -19.5 - and concluded that, because the number was between 8 and 20, all accused Pro V1 golf balls infringed. He performed no analysis, statistical or otherwise, to support this conclusion. (See Ex. 6, 3/12/07 Cadorniga Tr. at 290:11 – 292:6). He has no basis for his opinion that the five ball sample is “statistically significant,” and, therefore, has no basis for his opinion that properties of those five balls accurately represent the properties of all accused Pro V1 golf balls.

**b. Mr. Cadorniga’s Opinion is Nothing More than a Layman’s Commentary on the Weight that Should be Accorded to Evidence Already in the Record**

Without offering any statistical basis to rely on Dr. Caulfield’s testing, Mr. Cadorniga’s “opinion” with regard to the “8 to 20” limitation amounts to nothing more than a commentary upon the weight that should be accorded to evidence already in the record - to wit, Dr. Caulfield’s reports and Acushnet documents. A simple review of the numbers already in evidence, without any kind of statistical or mathematical analysis, does not demonstrate any skill or technique different from a layperson. Ex. 21, *Ortiz v. Yale Material Handling Corp.*, No. 03-3657, 2005 U.S. Dist. LEXIS 18424 at \*19 - \*30, (D. Del. 2005) (excluding an expert report that based its findings upon tests performed by a third party without using any methodology or analysis). Mr. Cadorniga did nothing other than compare numbers from Dr. Caulfield’s test results and Acushnet documents to the claim without performing any additional analysis. This is nothing different than what

a layperson would do. His opinion serves no purpose other than to confuse the jury by according unnecessary credence to documents and testing already in evidence. This commentary is an inappropriate subject of expert testimony and it does not fit with the issues of this case. Thus, Mr. Cadorniga's report should be excluded.

**B. Bridgestone Has Offered Insufficient Evidence to Prove Infringement of the '707 Patent**

**1. Bridgestone Has Provided No Admissible Evidence Regarding the Infringement of the '707 Patent**

Bridgestone has offered no expert testimony regarding the infringement of the '707 patent other than Mr. Cadorniga's report. For the reasons described above, Mr. Cadorniga's expert report on the '707 patent should be excluded under the Third Circuit's jurisprudence regarding Fed. R. Ev. 702 and *Daubert v. Merrill Dow*. In the absence of this report, Bridgestone has offered no evidence to prove that any accused Pro V1 golf ball infringes claim 1 of the '707 patent. See *Chemipal Ltd. v. Slim-Fast Nutritional Foods, Int'l.*, 350 F.Supp.2d 582, 597 (D.Del. 2004) ("Chemipal's entire basis for asserting damages is Dr. Shuv-Ami's expert testimony, which. . . must be precluded for lack of reliability. . . . Because of the lack of record evidence . . . summary judgment for Slim-Fast is appropriate.").

**2. Applicable Law**

**a. Summary Judgment**

Summary judgment should be granted when no "reasonable jury could return a verdict for the nonmoving party." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986); Fed.R.Civ.P. 56(c). The use of summary judgment is particularly appropriate in complex patent infringement actions because it is a useful tool to secure a just and speedy determination of the action and to simplify and pare down the issues in such complex

cases. *See Celotex Corp. v. Catrett*, 477 U.S. 317, 327 (1986); *Nike Inc. v. Wolverine World Wide, Inc.*, 43 F.3d 644, 646 (Fed. Cir. 1994) (“Summary judgment is appropriate in a patent case, as in other cases, when there is no genuine issue as to any material fact and the moving party is entitled to judgment as a matter of law.”)

**b. Bridgestone’s Burden of Proving Infringement**

Literal infringement is determined in a two-step analysis. The first step, interpretation of the asserted claims, is a question of law, and the court must determine the scope and meaning of the claims. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff’d.*, 517 U.S. 370 (1996). Claims are construed with reference to the claim language, the patent specification and the prosecution history which together constitute the “intrinsic” evidence. *Loctite v. Ultraseal*, 781 F.2d 861, 867 (Fed. Cir. 1985). When determining the scope and meaning of the patent claims, the language of the claims in light of the specification is considered first. *McGill, Inc. v. John Zink Co.*, 736 F.2d 666, 672 (Fed. Cir. 1984).

In a patent case, the patentee bears the burden of proving infringement. *See Under Sea Industrial, Inc. v. Dacor Corp.*, 833 F.2d 1551, 1557 (Fed. Cir. 1987). To establish infringement, the patentee must prove that the accused products contain each and every limitation of the asserted claim, either literally or by equivalence. *See S. Bravo System v. Containment Techs. Corp.*, 96 F.3d 1372, 1376 (Fed. Cir. 1996). “If even one limitation is missing, there is no literal infringement.” *Mas-Hamilton Group v. LaGard, Inc.*, 156 F.3d 1206, 1211 (Fed. Cir. 1998).

Where, as here, the nonmoving party has the burden of proof at trial, the moving party need only point to a lack of evidence and has no burden to disprove the nonmoving party’s claim. *See Celotex*, 477 U.S. at 325. The non-moving party must then come forward with evidence demonstrating a genuine issue as to a material fact, and such evidence must consist not merely of denials or assertions that a fact is challenged. *See id.*

at 324. If the non-moving party fails to make a sufficient factual showing as to any element of its case on which it bears the burden of proof at trial, the “plain language of Rule 56(c) mandates the entry of summary judgment.” *Id.* at 322.

**C. Bridgestone Has Not Proven that Any Accused Pro V1 Golf Ball Infringes**

Neither Mr. Cadorniga nor Dr. Caulfield present any specific measurements performed on individual golf balls for any measurement. Rather, they report averages and numbers gleaned from Acushnet documents.

This approach masks the fact that these values were obtained from different golf balls. That is, Bridgestone has not measured one single golf ball for all of the limitations in claim 1 of the ‘707 patent. In fact, most of Mr. Cadorniga’s opinions regarding the properties of the accused golf balls are taken from reading Acushnet’s manufacturing guidelines out of context.

Consequently, Dr. Caulfield’s testing has not shown that any one Pro V1 golf ball infringes the ‘707 patent. Rather, all that it has shown is that there are two Pro V1 golf balls that do not infringe because their hardness is not literally between 8 and 20.

Sample Ball	wherein the core center hardness is up to 75 degrees,	the core surface hardness is up to 85 degrees,	the core surface hardness is higher than the core center hardness by 8 to 20 degrees	The intermediate layer hardness is higher than the core surface hardness by at least 5 degrees, <sup>2</sup>	and the cover hardness is lower than the intermediate layer hardness by at least 5 degrees,	and the dimples occupy at least 62% of the ball surface.
P2.ZA.02	65.2	83	17.8	Not Tested	Not Tested	Not Tested
P2.ZA.04	63.4	83.2	19.8	Not Tested	Not Tested	Not Tested
P2.ZA.06	61.4	82.2	20.8	Not Tested	Not Tested	Not Tested

<sup>2</sup> Although Dr. Caulfield did not test the cover and intermediate layer hardness of these accused Pro V1 golf balls, he did test these properties for the golf balls accused of infringing other patents-in-suit.

P2.ZA.08	63.8	84.2	20.4	Not Tested	Not Tested	Not Tested
P2.ZA.10	62.6	81.4	18.8	Not Tested	Not Tested	Not Tested

**D. Bridgestone Has Not Proven How Many Accused Pro V1 Golf Balls Infringe**

Mr. Cadorniga has opined that all accused Pro V1 golf balls infringe claim 1 of the '707 patent. However, Dr. Caulfield's raw data shows that there is a ball-to-ball variation in hardness gradient, and that some golf balls literally have a hardness gradient greater than 20. Mr. Cadorniga has not put forth any data or analysis to quantify how many accused Pro V1 golf balls infringe, if, indeed, they do at all.

This court rejected similar reasoning in *Pharmastem Therapeutics v. Viacell*. Ex. 23, *Pharmastem Therapeutics, Inc. v. Viacell, Inc.*, No. 02-148-GMS, 2004 U.S. Dist LEXIS 25176 (D. Del. 2004). In that case, the plaintiff alleged that 100% of the defendant's cord blood units had an infringing quantity of cells. *Id.* at \*13 - \*14. However, just like hardness gradient, the quantity of cells varied from product to product. *Id.* Consequentially, the court found that the plaintiff failed to prove infringement:

Pharmastem presented no evidence to the court regarding how to quantify the defendants' infringement and damages flowing from the infringement. Instead, Pharmastem chose to offer the evidence of successful adult transplants to prove that 100% of the defendants' units infringe. However, evidence of one successful adult transplant with a single cord blood unit does not prove that any other unit has sufficient stem cells to reconstitute a human adult because, as previously stated, cord blood units are highly variable in their stem cell content. As such, the court will not infer that 100% of the defendants' units infringe based on the defendants' statements regarding adult transplantation. Pharmastem failed to present evidence to the jury from which it could conclude that any specific cord blood unit or units stored by any of the defendants contained stem cells in a sufficient amount to reconstitute a human adult. The court, therefore, cannot determine which or how many of the defendants' units infringe, or how to quantify damages for infringement.

Mr. Cadorniga did nothing more in his expert report than cite to some Acushnet documents and measurements that Dr. Caulfield performed on five golf balls and give the conclusory opinion that all [REDACTED] accused Pro V1 golf balls infringe. He has



provided no testing or data to suggest that all of the accused Pro V1 golf balls possess a hardness gradient between 8 and 20. He has not performed any analysis to quantify how many accused Pro V1 golf balls possess such a gradient. Consequentially, he has provided this Court with no basis to find that 100%, or any other percentage, of the accused Pro V1 golf balls infringe claim 1 of the '707 patent.

**E. Mr. Cadorniga Offers No Evidence of Infringement for the Pro V1 392 and Pro V1 392 (stretched) Golf Balls**

Mr. Cadorniga does not rely on any testing to support his opinion that the Pro V1 392 and Pro V1 392 (stretched) balls infringe claim 1. (*See* Ex.9, 1/16/2007 Cadorniga Report at E-9). He simply assumes that these balls have the same hardness gradients as the ◀Pro V1•392▶. He cites to Acushnet documents – that do not even disclose a hardness gradient – and then gives his opinion that the balls have the same gradient with nothing more than his *ipse dixit* to support it. (*Id.* at n. 15). This showing is inadequate to carry Bridgestone's burden of persuasion. *General Electric v. Joiner*, 522 U.S. 136, 146 (1997) ("nothing in either Daubert or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert"). A patentee must make a *prima facie* showing as to each accused device before the burden shifts to the accused infringer to offer contrary evidence. *L & W, Inc. v. Shertech, Inc.*, 471 F.3d 1311, 1318 (Fed. Cir. 2006) (finding that an expert's assumption that all the accused products are like the one he tested is inadequate to shift the burden of proof to the accused infringer). Because Bridgestone has provided nothing more than Mr. Cadorniga's unsupported assumption to support its infringement claim against the Pro V1 392 and Pro V1 392 (stretched) golf balls, Acushnet is entitled to summary judgment of non-infringement on these balls.

## VII. CONCLUSION

For all of the foregoing reasons, Acushnet respectfully requests the Court to grant its Motion for Summary Judgment of Non-Infringement

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**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

**CERTIFICATE OF SERVICE**

I, David E. Moore, hereby certify that on April 20, 2007, the attached document was hand delivered to the following persons and was electronically filed with the Clerk of the Court using CM/ECF which will send notification to the registered attorney(s) of record that the document has been filed and is available for viewing and downloading:

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